IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	B. Ryland Wiggs
Serial No.:	10/073,515
Filed:	February 11, 2002
For:	"Method And Apparatus For Inhibiting Ice Accumulation In Hvac Systems"
Group Art Unit:	3744
Examiner:	Melvin Jones
Attorney's Docket No.:	N8233
Customer No.:	23456

DECLARATION OF B. RYLAND WIGGS TRAVERSING REJECTIONS

UNDER 37 C.F.R. 1.132

1. My name is B. Ryland Wiggs. I am the inventor of the "Method And Apparatus For Inhibiting Ice Accumulation In HVAC Systems" described and claimed in the pending U.S. Patent application identified above. Attached to this Declaration as Exhibit 1 is a copy of my CV that accurately describes my experience in heating and air conditioning technology and its geo-thermal heat pump applications.

2. I have reviewed the Office Action issued by the U.S. Patent and Trademark Office ("PTO") in this patent application on June 10, 2004. I have also read the patents relied on by the Patent Examiner in rejecting the claims of our patent application.

3. The invention that is the subject matter of each of the claims in our patent application has met two related long felt but heretofore unresolved needs in the heating and air-conditioning industry: (1) the need to eliminate or greatly reduce frost buildup on the outdoor coil surfaces of air-sourced heating and cooling systems whenever the temperature of the coil falls below 32.degree. F and (2) the concurrent

need to eliminate or greatly reduce the intermittent use of defrost cycles when operating air-sourced heating and cooling systems in a heating mode.

The heating and air-conditioning industry has sales of over $70 billion annually. Sales of heating and cooling systems having air-exposed refrigerant coils represent a substantial portion of that amount. In the heating mode operation of an air-sourced heat pump system, or other similar heating and cooling system, a layer of frost normally builds on the outdoor coil surfaces whenever the temperature of the coil falls below 32.degree. F. This frost significantly reduces the heating capacity of the heat pump and, as the frost continues to accumulate, the performance of the unit eventually degrades to a point where the frost has to be melted.

Others have attempted to solve the problem with frost buildup on the evaporator coils without success. Previous commercial solutions have not prevented the frost buildup but have only succeeded in melting the frost after it has accumulated. Currently, the most efficient way to melt the frost is through a defrost cycle of operation, with or without assistance of a coil fan.

This defrost cycle, however, is extremely inefficient. The heating cycle is interrupted and, in effect, replaced with a counterproductive air conditioning cycle. This wastes energy and reduces the heating capacity of the heat pump. Heat flows in the wrong direction during defrosting cycles, thus cooling the house or building. To offset this cooling it can be necessary to turn on the resistance heaters, thereby

consuming additional energy. Prior to the present invention, the need to defrost the evaporator coil was a necessary evil in all but the most arid environments.

4. The invention that is the subject matter of each of the claims in the present patent application has solved a problem encountered by those skilled in the art. In the multi-billion dollar heating and air-conditioning industry, the advances of those skilled in the art have succeeded only in improving the efficiencies of the defrost cycles through expensive and complex defrost sensors and controllers. For example, numerous patents are directed toward apparatus and systems providing a more precisely controlling the defrost process. However, none of these solutions or the solutions of others skilled in the art solves the underlying problem of preventing ice buildup on the evaporator coils.

The present invention solves the problem of ice build up without the need of employing a defrost cycle and, thus, allows: (1) continuous, efficient operation of the heating and cooling system in the heating cycle without interruption for a defrost cycle; (2) reduces the complexity of the control systems; and (3) greatly reduces the energy consumption while operating in the heating mode.

5. There are no indicia in the heating and air-conditioning industry literature that combining a non-stick coating with finned evaporator tubing to prevent ice accumulation in the heating mode of a heat pump system had been contemplated prior to the present invention.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

B. Ryland Wiggs

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October 8, 2004

Date

B. RYLAND WIGGS

B. Ryland Wiggs is a licensed attorney, being a present member of the Pennsylvania Bar, the Tennessee Bar, the United States District Court (E. Pa.) Bar, and the United States Court of Appeals (3" Circuit) Bar. Mr. Wiggs received his B.S Degree in Business Administration from the University of Tennessee at Chattanooga, and his Doctor of Jurisprudence Degree from the University of Tennessee School of Law. Mr. Wiggs has a strong history in the renewable energy and energy efficiency fields, having received various United States Patents in these areas. Mr. Wiggs has negotiated Utility Power Purchase Contracts, has negotiated Utility energy efficiency rebate programs, and has obtained renewable energy project permits from the U.S. Federal Energy Regulatory Commission. Mr. Wiggs has served as Chairman of the California Energy Commission's Geothermal Heat Pump Collaborative Subcommittee on Regulatory Issues, as well as having served on the Canadian Standards Association Subcommittee on Performance of Direct Expansion/Exchange ("DX") Ground Source Heat Pumps, which developed the C748 draft regarding DX Testing Standards. These DX system Canadian Standards were ultimately approved by ASHRAE in the U.S.A. to formulate ARI Testing Standard 870 for DX heat pump systems. Mr. Wiggs is the founder of IPO Development Corporation, which successfully structured and effected an Initial Public Offering ("IPO") on NASDAQ, valued at approximately $180 million, comprised of 22 nationwide railroad contracting Founding Companies, which subsequently became one of the leading rail services providers in North America. Mr. Wiggs has worked extensively with direct expansion heat pump technologies, as well as refrigerant-based power generation systems over a number of years. In this regard, Mr. Wiggs has been the sole or primary developer of technologies receiving the following U.S. Patents: U.S. Patent No. 5,272,879: U.S. Patent No. 5,419,135; U.S. Patent No. 5,623,986 to Wiggs; U.S. Patent No. 5,671,608; U.S. Patent No. 5,816,314 to Wiggs, et al.; U.S. Patent No. 5,946,928 to Wiggs; U.S. Patent No. 6,615,601 B1 to Wiggs; U.S. Patent to Wiggs No. 6,751,974 B1; and U.S. Patent to Wiggs No. 6,789,608 B1. Mr. Wiggs is currently the President/CEO of Earth To Air Systems, Inc. ("ETA"), which is a USA based company specializing in the related fields of development, manufacturing, and sales of DX geothermal heating/cooling systems. Mr. Wiggs writes Dealer Manuals, Terms and Conditions of Sale, Limited Warranties, and Sales Materials for DX heating/cooling related technologies. Utilizing technologies and system designs developed by Mr. Wiggs, ETA has produced the most efficient reverse-cycle heating/cooling system known to exist, having received the highest known international ETL testing laboratory efficiency results ever achieved as of 2004 under analogous testing conditions. Additionally, Mr. Wiggs has authored copyrighted treatises regarding the acceptable limits of varying soil Ph levels on sub-surface copper in geothermal DX heating/cooling system applications (and explaining how to protect the copper when required), and regarding the ozone depletion potential of various refrigerants, including pertinent provisions of the Montreal Protocal as such provisions relate to all refrigerant based heating/cooling systems. Mr. Wiggs routinely makes presentations to architects, design engineers, mechanical engineers, utility companies, and various government agencies regarding geothermal system heating/cooling technologies.